

Applicants: Reba Goodman, et al.
U.S. Serial No.: 09/769,902
Filed: January 25, 2001
Page 2

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A ~~non-invasive~~ method for regulating the expression of an exogenous gene introduced into a subject by a gene-regulation during gene therapy comprising the steps of:
 - (a) introducing nCTCTn electromagnetic field response elements into a gene promoter not having any electromagnetic field response elements *in vitro*;
 - (b) then introducing the gene promoter from step (a) into the exogenous gene so that the promoter controls the expression of the exogenous gene ~~subject to serve as switches for regulating exogenously introduced genes; and~~
 - (c) introducing the exogenous gene into the subject by the gene therapy; and
 - ~~(e)~~ (d) applying an electromagnetic field to the ~~introduced~~ nCTCTn electromagnetic field response elements so as to thereby regulate ~~to induce gene expression of the exogenous gene introduced into~~ ~~in the subject by the gene therapy to treat a genetic disease selected from the group consisting of diabetes, heart disease, and cancer.~~
2. (Currently Amended) The method as set forth in claim 1, wherein the ~~introduced electromagnetic field response elements are nCTCTn sequences in promoter~~ is an HSP70 gene promoter.

3. (Currently Amended) The method as set forth in claim 2, wherein three nCTCTn electromagnetic field response elements ~~sequences in an HSP70 promoter~~ are introduced.
4. (Currently Amended) The method as set forth in claim 3, wherein the nCTCTn electromagnetic field response elements ~~sequences~~ lie between about -230 and about -160 upstream from the transcription initiation site in the HSP70 gene promoter.
5. (Currently Amended) The method as set forth in claim 1, wherein the ~~introduced electromagnetic field response elements are nCTCTn sequences in~~ promoter is a c-myc gene promoter.
6. (Currently Amended) The method as set forth in claim 5, wherein eight nCTCTn electromagnetic field response elements ~~sequences in a c-myc gene promoter~~ are introduced.
7. (Currently Amended) The method as set forth in claim 6, wherein the nCTCTn electromagnetic field response elements ~~sequences~~ lie between about -1257 and about -353 upstream from the transcription initiation site in the c-myc gene promoter.
8. (Original) The method as set forth in claim 1, wherein the electromagnetic field is applied at a field strength of about 8 μ T and a frequency of about 60Hz for a time of about 30 minutes.
9. (Currently Amended) A ~~non-invasive~~ method for regulating

the expression of an exogenous gene introduced into a subject by a gene regulation during gene therapy comprising the steps of:

- (a) introducing at least one nCTCTn electromagnetic field response ~~elements~~ element into a gene promoter not having any electromagnetic field response elements *in vitro*;
- (b) then introducing the gene promoter from step (a) into the exogenous gene so that the promoter controls the expression of the exogenous gene ~~subject to serve as switches for regulating exogenously introduced genes~~; and
- (c) introducing the exogenous gene into the subject by the gene therapy; and
- ~~(e)~~ (d) applying an electromagnetic field to each ~~introduceed~~ nCTCTn electromagnetic field response element so as to thereby regulate ~~to induce gene expression of the exogenous gene introduced into in the subject by the gene therapy to treat a genetic disease selected from the group consisting of diabetes, heart disease, and cancer.~~

10. (Currently Amended) The method as set forth in claim 9, wherein the ~~introduced electromagnetic field response element is an nCTCTn sequences in promoter~~ is an HSP70 gene promoter.

11. (Currently Amended) The method as set forth in claim 9, wherein each ~~introduced electromagnetic field response element is an nCTCTn sequences in the promoter~~ is a c-myc gene promoter.

12. (Original) The method as set forth in claim 9, wherein the electromagnetic field is applied at a field strength of about $8\mu\text{T}$ and a frequency of about 60Hz for a time of about 30 minutes.
13. (Currently Amended) An expression vector comprising:
 - (a) a nucleic acid whose expression is desired; and
 - (b) a promoter which permits the expression of the nucleic acid, wherein (i) the promoter does not comprise endogenous electromagnetic response elements, and (ii) the promoter comprises at least one exogenous nCTCTn electromagnetic response element which, when the expression vector is in a cell, regulates the expression of the nucleic acid by application of an electromagnetic field to the cell.
14. (Currently Amended) The vector of in claim 13, wherein the promoter comprises more than one exogenous nCTCTn electromagnetic field response element ~~is introduced~~.
15. (Currently Amended) The vector of in claim 13, wherein ~~each introduced electromagnetic field response element is an nCTCTn sequence in the promoter~~ is an HSP70 gene promoter.
16. (Currently Amended) The ~~step in~~ vector of claim 15, wherein the HSP70 gene promoter comprises three exogenous nCTCTn electromagnetic field response elements ~~sequences in an HSP70 promoter are introduced~~.
17. (Currently Amended) The ~~step in~~ vector of claim 16, wherein the exogenous nCTCTn sequences lie between about -230 and

about -160 upstream from the transcription initiation site
in the HSP70 gene promoter.

18. (Currently Amended) The vector ~~in~~ of claim 13, wherein each ~~introduced electromagnetic field response element is an nCTCTn sequence in the promoter~~ is a c-myc gene promoter.
19. (Currently Amended) The ~~step in vector of~~ claim 18, wherein ~~eight nCTCTn sequences in a the c-myc gene promoter comprises eight exogenous nCTCTn electromagnetic field response elements are introduced~~.
20. (Currently Amended) The ~~step in vector of~~ claim 19, wherein the exogenous nCTCTn sequences lie between about -1257 and about -353 upstream from the transcription initiation site in the c-myc gene promoter.
21. (Currently Amended) The ~~step in vector of~~ claim 13, wherein the electromagnetic field is applied at a field strength of about 8 μ T and a frequency of about 60Hz for a time of about 30 minutes.
22. (Currently Amended) A method for regulating the expression of a nucleic acid in a cell comprising applying an electromagnetic field to a cell having therein an expression vector comprising:
 - (a) the nucleic acid and
 - (b) a promoter which permits the expression of the nucleic acid, wherein (i) the promoter does not comprise endogenous electromagnetic response elements, and (ii) the promoter comprises at least one exogenous nCTCTn electromagnetic response element which, when

the expression vector is in a cell, regulates expression of the nucleic acid by application of an electromagnetic field to the cell, so as to thereby regulate the expression of the nucleic acid in the cell.

23. (Currently Amended) The method of ~~in~~ claim 22, wherein the promoter comprises more than one nCTCTn electromagnetic field response element ~~is introduced~~.
24. (Currently Amended) The method of ~~in~~ claim 22, wherein ~~each introduced electromagnetic field response element is an nCTCTn sequence in~~ the promoter is an HSP70 gene promoter.
25. (Currently Amended) The method of ~~in~~ claim 24, wherein ~~three nCTCTn sequences in an~~ the HSP70 promoter are introduced comprises three nCTCTn electromagnetic field response elements.
26. (Currently Amended) The method of ~~in~~ claim 25, wherein the nCTCTn sequences lie between about -230 and about -160 upstream from the transcription initiation site in the HSP70 gene promoter.
27. (Currently Amended) The method of ~~in~~ claim 22, wherein ~~each introduced electromagnetic field response element is an nCTCTn sequence in~~ the promoter is a c-myc gene promoter.
28. (Currently Amended) The method of ~~in~~ claim 27, wherein ~~eight nCTCTn sequences in a~~ the c-myc gene promoter are introduced comprises eight nCTCTn electromagnetic field response elements.

Applicants: Reba Goodman, et al.
U.S. Serial No.: 09/769,902
Filed: January 25, 2001
Page 8

29. (Currently Amended) The method of ~~in~~ claim 28, wherein the nCTCTn sequences lie between about -1257 and about -353 upstream from the transcription initiation site in the c-*myc* gene promoter.
30. (Previously Presented) The method in claim 22, wherein the electromagnetic field is applied at a field strength of about 8 μ T and a frequency of about 60Hz for a time of about 30 minutes.